



# PATENT SPECIFICATION

**205,655**

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## PROVISIONAL SPECIFICATION.

### Improvements relating to Roller Bearings.

We, GEORGE HERBERT FLETCHER, of Seaton, Park Avenue, Ashton-on-Mersey, in the County of Chester, a subject of the King of Great Britain, and METROPOLITAN-VICKERS ELECTRICAL COMPANY LIMITED, of 4, Central Buildings, in the City of Westminster, a British company, do hereby declare the nature of this invention to be as follows:

10 A condition essential to the efficient operation of roller bearings is that each roller shall be in line contact with its associated race under all conditions of operation, and to ensure this with bearings as at present constructed the most accurate alignment of the bearing support or housing and the member journaled therein is necessary, a very slight degree of mis-alignment resulting in 20 point contact between the rollers and the race with consequent inefficient operation.

The object of the present invention is to provide an improved mounting of roller bearing wherein provision is made for compensating for any slight mis-alignment of the shaft and bearing housing so as to maintain line contact between the rollers and roller race under all conditions of operation and obviate the necessity for effecting and maintaining such 30 alignment as has hitherto been necessary. To the attainment of this end the invention consists in mounting the roller race in its housing in such manner that it is capable of limited angular movement in any direction. This may be effected by interposing between the roller race and the bearing housing an intermediate resilient 40 bush which will allow the race to tilt slightly in any direction and thus secure proper distribution of pressure on the rollers and race in the event of slight mis-alignment of the shaft and bearing hous-

ing. The invention is particularly applicable to roller bearings designed for use in connection with railway and tramway motors, in which connection it also introduces a desirable degree of resiliency between the driven axle, which is subject to all shocks of the track, and the motor.

The resilient bush may take a number of forms. In one arrangement it consists of a metal cylinder of suitable dimensions having at least one annular groove extending from each end to within a short distance of the other end thereof so as to form a structure of zig-zag section affording the necessary resilience to angular movement of the roller race in any direction. In another arrangement the bush is in the form of a metal cylinder of suitable dimensions having annular grooves therein extending from opposite ends respectively to within a short distance of the centre thereof so as to form two concentric walls adapted to engage the roller race and housing respectively united by a central annular web affording the necessary resilience to permit a limited angular movement of the roller race in any direction. These examples are, however, only to be regarded as typical as the invention may take other forms without transgressing the limits thereof.

Obviously, if desired in special cases the resilient bush might be interposed between the inner bearing race and the shaft, instead of between the outer race and the housing.

Dated the 19th day of September, 1922.

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## COMPLETE SPECIFICATION.

## Improvements relating to Roller Bearings.

We, GEORGE HERBERT FLETCHER, of Seaton, Park Avenue, Ashton-on-Mersey, in the County of Chester, a subject of the King of Great Britain, and METROPOLITAN-VICKERS ELECTRICAL COMPANY LIMITED, of 4, Central Buildings, in the City of Westminster, a British company, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

A condition essential to the efficient operation of roller bearings is that each roller shall be in line contact with its associated race under all conditions of operation, and to ensure this with bearings as at present constructed the most accurate alignment of the bearing support or housing and the member journalled therein is necessary, a very slight degree of mis-alignment resulting in point contact between the rollers and the race with consequent inefficient operation.

The object of the present invention is to provide an improved mounting of roller bearing wherein provision is made for compensating for any slight misalignment of the shaft and bearing housing so as to maintain line contact between the rollers and roller race under all condition of operation and obviate the necessity for effecting and maintaining such extremely accurate alignment as has hitherto been necessary. To the attainment of this end it is known to interpose a resilient bush between the roller race and the bearing housing or between the roller race and the shaft in such manner that the roller race is capable of limited angular movement in any direction. According to the invention the intermediate resilient bush comprises a metallic cylinder having at least one co-axial annular groove extending from each end thereof which will allow the race to tilt slightly in any direction and thus secure proper distribution of pressure on the rollers and race in the event of slight misalignment of the shaft and bearing housing. The invention is particularly applicable to roller bearings designed for use in connection with railway and tramway motors, in which connection it also introduces a desirable degree of resiliency between the driven axle, which is subject to all the shocks of the track, and the motor.

In order that the invention may be more clearly understood and readily carried into practice reference will now be made to the accompanying drawings wherein two constructional forms are illustrated by way of example, Figs. 1 and 2 being longitudinal sections of the different forms of resilient bush.

Referring to Fig. 1 the resilient bush consists of a metal cylinder 1 interposed between the roller race and the bearing housing (not shown), said cylinder being of suitable dimensions and having annular grooves 2 and 3 extending from each end to within a short distance of the other end so as to form a structure of zig-zag section affording the necessary resilience to angular movement of the roller race in any direction.

In Fig. 2 the bush is in the form of a metal cylinder 4 of suitable dimensions having annular grooves 5 and 6 extending from opposite ends to within a short distance of the centre thereof so as to form two concentric walls 7 and 8 adapted to engage the roller race and housing (not shown) united by a central annular web 9 affording the necessary resilience to permit a limited angular movement of the roller race in any direction. The bush is provided with a recess 10 in its inner periphery so as to permit of the required movement relative to the roller race. Alternatively, the recess may be on the outer periphery of the bush if desired.

It will be understood that the forms herein illustrated and described are only to be regarded as typical examples as the invention may take other forms without transgressing the limits thereof.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that we are aware of Specification No. 2204 of 1890 and we make no claim to anything therein claimed or described but what we claim is:—

1. A roller bearing having a resilient bush interposed between the roller race and the bearing housing or between the roller race and the shaft, the resilient bush comprising a metallic cylinder having at least one co-axial annular groove extending from each end thereof.

2. A roller bearing as claimed in Claim 1, wherein the annular grooves in the

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bush extend from each end to within a short distance of the other end.

3. A roller bearing as claimed in Claim 1, wherein the annular grooves in the bush extend from each end to within a short distance of the centre thereof.

5. In or for a roller bearing a resilient

bush constructed as described with reference to the accompanying drawings. 10  
Dated the 20th day of June, 1923.  
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2, Norfolk Street, Strand, London, W.C.,  
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[This Drawing is a reproduction of the Original on a reduced scale]

Fig. 1.

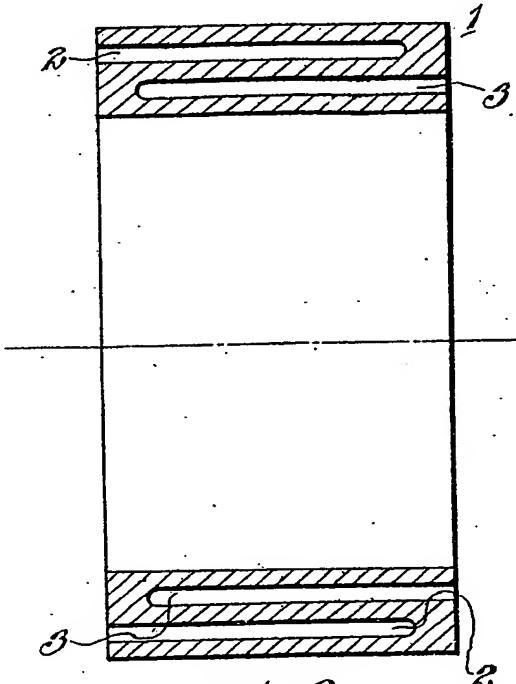
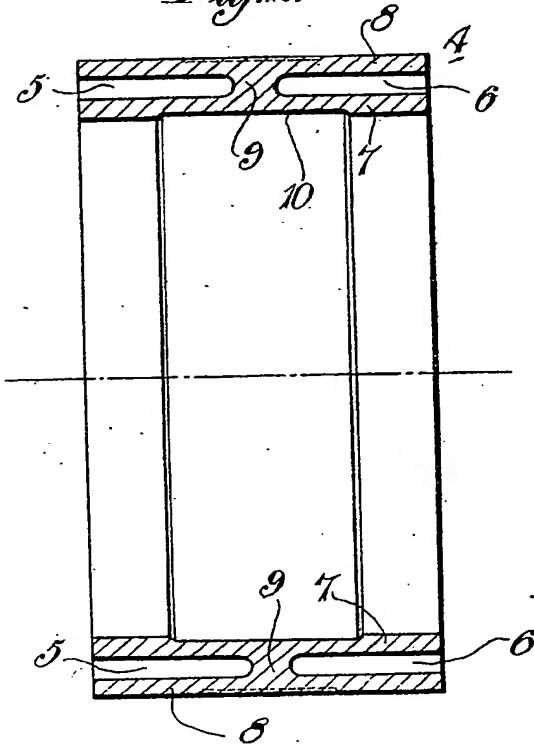


Fig. 2.



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